

ABSTRACT OF THE INVENTION

A temperature control system for multiple process components in a semiconductor processing facility includes a common cooling unit for controlling the temperature of a cooling fluid and multiple remote temperature control modules in fluid communications with the common cooling unit that separately control the temperature of the multiple process components. The remote temperature control modules are located near the process components and each remote temperature control module includes a circulation loop for the cooling fluid from the common cooling unit and a circulation loop for a heat transfer fluid that is received from a process component. A heat exchanger within the remote temperature control module allows heat to be transferred from the heat transfer fluid to the cooling fluid, thereby providing cooling to the process component. A heat source may also be included within the remote temperature control module to provide heat to the heat transfer fluid and therefore to the process component. The cooling unit may be a refrigeration unit that provides compressed refrigerant to the remote temperature control modules and the remote temperature control modules may include an upstream thermal expansion valve and a downstream refrigerant flow control valve that form an evaporation chamber for the compressed refrigerant.